Oral powders

The requirements of this monograph do not necessarily apply to powders to be used for the preparation of oral solutions or suspensions.

Definition

Oral powders are preparations consisting of solid, loose, dry particles of varying degrees of fineness. They contain one or more active ingredients, with or without excipients and, if necessary, authorized colouring matter and flavouring substances. They are generally administered in or with water or another suitable liquid. They may also be swallowed directly. They are presented as single-dose or multidose preparations.

Each dose of a single-dose powder is enclosed in an individual container, for example a packet, a sachet or a vial. Multidose oral powders require the provision of a measuring device capable of delivering the quantity prescribed.

Manufacture

The manufacturing process for oral powders should meet the requirements of Good Manufacturing Practice (GMP).

The following information is intended to provide broad guidelines concerning the critical steps to be followed during production of oral powders.

In the manufacture of oral powders, measures are taken to:

- ensure that there is a suitable particle size range with regard to the intended use;
- minimize the risk of microbial contamination;
- minimize the risk of cross-contamination.

Appropriate measures should also be taken to counteract segregation of the components of the powder mixture. Segregation takes place whenever a free-flowing powder consisting of particles of a range of sizes is handled, including the mixing stage and emptying of the mixer container. The prime means to counteract segregation is to use components of similar particle size. In cases where the risk of segregation is significant, oral powders containing a low proportion of the active ingredient, for example, less than 5% of total mass, should preferably be prepared as single-dose preparations.

In the production of oral powders, the components of the powder mixture are passed through a sieve to remove lumps and particle aggregates. The weighed masses of the sieved components, preferably of a narrow particle size distribution, are then transferred to a suitable mixer. The greatest risk of segregation of the powder mixture usually occurs when emptying the mixer container and when the powder mixture is dosed into the containers. Ensuring the suitability of the mixing equipment and the dosing devices is therefore critical.

Throughout manufacturing certain procedures should be validated and monitored by carrying out appropriate in-process controls. These should be designed to guarantee the effectiveness of each stage of production. In-process controls during the manufacture of oral powders should include the dosing by mass of the powder into the containers.

The validation of the manufacturing process and the in-process controls are documented.

The intended mass of one dose of an oral powder should be at least 500 mg to minimize the effect of loss of powder when taken from a single-dose container or to allow a proper dosing when using a measuring device.

Visual inspection

Inspect the powder, using at least 20 containers for single-dose preparations. Evidence of physical and/ or chemical instability is demonstrated by noticeable changes in physical appearance, including texture [e.g. clumping] or colour.

Uniformity of content

See the general requirements 5.1 Uniformity of content for single-dose preparations. Single-dose oral powders with a content of active ingredient of less than 5 mg or less than 5% of the total mass comply with the test, unless otherwise specified in the individual monograph. If the preparation has more than one active ingredient, the requirement applies only to those active ingredients that fall into the above category.

Uniformity of mass

See the general requirements 5.2 Uniformity of mass for single-dose preparations. Single-dose oral powders comply with the test. If the test for uniformity of content is prescribed for all active ingredients, the test for uniformity of mass is not required.

Uniformity of mass of doses delivered by the measuring device

The measuring device provided with a multidose oral powder complies with the test. Weigh individually 20 doses taken at random from one or more multidose containers with the measuring device provided and determine the individual and average masses. Not more than two of the individual masses deviate by more than 10% from the average mass and none deviates by more than 20%.

Labelling

Every pharmaceutical preparation must comply with the labelling requirements established under GMP.

The label should include:

(1) the name of the pharmaceutical product;
(2) the name(s) of the active ingredients; INNs should be used wherever possible;
(3) for single-dose preparations, the amount of the active ingredient(s) per container and for multidose preparations, the amount of active ingredient in a suitable quantity by weight;
(4) the batch (lot) number assigned by the manufacturer;
(5) the expiry date and, when required, the date of manufacture;
(6) any special storage conditions or handling precautions that may be necessary;
(7) directions for use, warnings, and precautions that may be necessary;
(8) the name and address of the manufacturer or the person responsible for placing the product on the market.

Storage
If the preparation contains volatile or hygroscopic ingredients, the oral powder should be kept in tightly closed container.

Requirements for specific types of oral powder

Effervescent powders

Definition
Effervescent powders are presented as single-dose or multidose preparations and generally contain acidic substances and carbonates or hydrogen carbonates which react rapidly in the presence of water to release carbon dioxide. They are intended to be dissolved or dispersed in water before administration.

Storage
Effervescent powders should be kept in tightly closed containers.